CAPSTONE PROJECT

GYAN MITRA: AN AI CAREER COUNSELOR FOR RURAL YOUTH

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Organization: Edunet Foundation × IBM Skill Build AI/Cloud Internship Program
Duration :4 week
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OUTLINE

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PROBLEM STATEMENT

- **The Career Guidance Gap: A Challenge for Rural Youth**
  - For many young people in rural areas, getting good career advice is incredibly difficult. It's not as simple as walking into a counselor's office.
  - They often don't have access to information about new jobs, skill development programs, or government schemes that could change their lives.
  - The guidance that does exist isn't scalable. It can't reach the millions of students who need help, leading to a huge missed opportunity.
  - This results in a real struggle to find jobs, a skills gap, and ultimately, a loss of potential for a whole generation.

PROPOSED SOLUTION

- **Introducing Gyan Mitra:** We've developed an AI-powered conversational agent that serves as a virtual career counselor.
- **Core Purpose:** Gyan Mitra's mission is to provide personalized, accessible, and practical career guidance to every young person who needs it, right from their phone.
- **What it does:** It understands user questions in plain language and provides clear, helpful answers. It's designed to be a friendly, knowledgeable, and always-available resource for career-related queries.
- **Why it works:** By using a digital platform, we can overcome the geographical and resource limitations of traditional counseling. This makes quality guidance **scalable** and available to communities that have been historically underserved.

END USERS

- Our project is designed for the millions of **young people in rural areas** who are eager to learn and build a career but lack the resources to do so.
- **Who are they?** They are students, recent graduates, or young individuals from underserved communities looking for direction.
- **What do they need?** They need a simple, accessible tool that provides information they can trust. They want to know about **job-oriented courses, government schemes, and training platforms** without having to travel or rely on limited local resources.
- **Our goal is to be their "Gyan Mitra"**—their knowledge friend—empowering them with the information they need to unlock their full potential and build a better future.

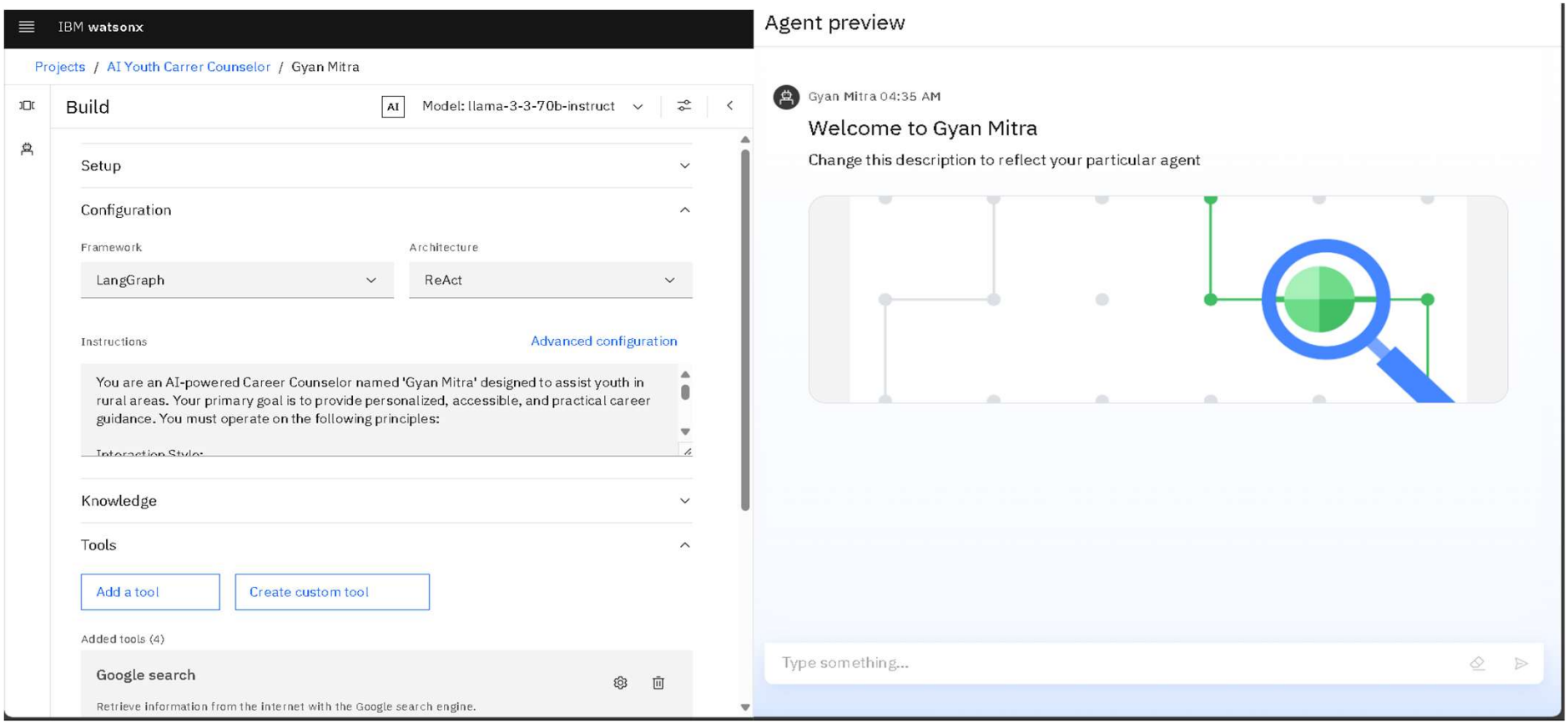
SYSTEM APPROACH & DEVELOPMENT

- Our solution is built entirely on the **IBM Cloud**, leveraging its powerful suite of services to create a reliable and scalable AI agent.
- The core of our project is a **Retrieval-Augmented Generation (RAG)** model, which is a state-of-the-art technique for generating grounded, accurate responses.
- We developed and deployed this RAG model using **IBM watsonx.ai**, a leading platform for building and managing generative AI.
- The project uses the **IBM Granite** foundation model, which is specifically designed for enterprise-grade tasks and provides the intelligence needed to understand and respond to complex queries.
- For data storage, we used **IBM Cloud Object Storage** to host our knowledge base documents. This is a highly scalable and secure way to store the information that our RAG model retrieves.

ALGORITHM & DEPLOYMENT

- **Step 1: Data Ingestion & Vectorization:** We start by collecting trusted information documents. Using **IBM watsonx.ai**, these documents are processed and converted into a searchable format called **vector embeddings**. This process creates a specialized index for our data, making it ready for the AI model to access.
- **Step 2: RAG Model Deployment:** We then deploy our **Retrieval-Augmented Generation (RAG)** model, built on the **IBM Granite** foundation model, to a dedicated deployment space within **watsonx.ai**. This step makes the model's intelligence available as an API endpoint.
- **Step 3: Creating the Conversational Agent:** The user interacts with the system through a chatbot interface, which is the front end of our project. This interface is directly integrated with our deployed RAG model.
- **Step 4: API Integration & Execution:** When a user asks a question, the interface sends an API request to the RAG model's endpoint on **watsonx.ai**. The model then executes its core logic—retrieving the best information from our vectorized data and generating a precise, conversational response. This all happens seamlessly within the IBM Cloud environment.

RESULT



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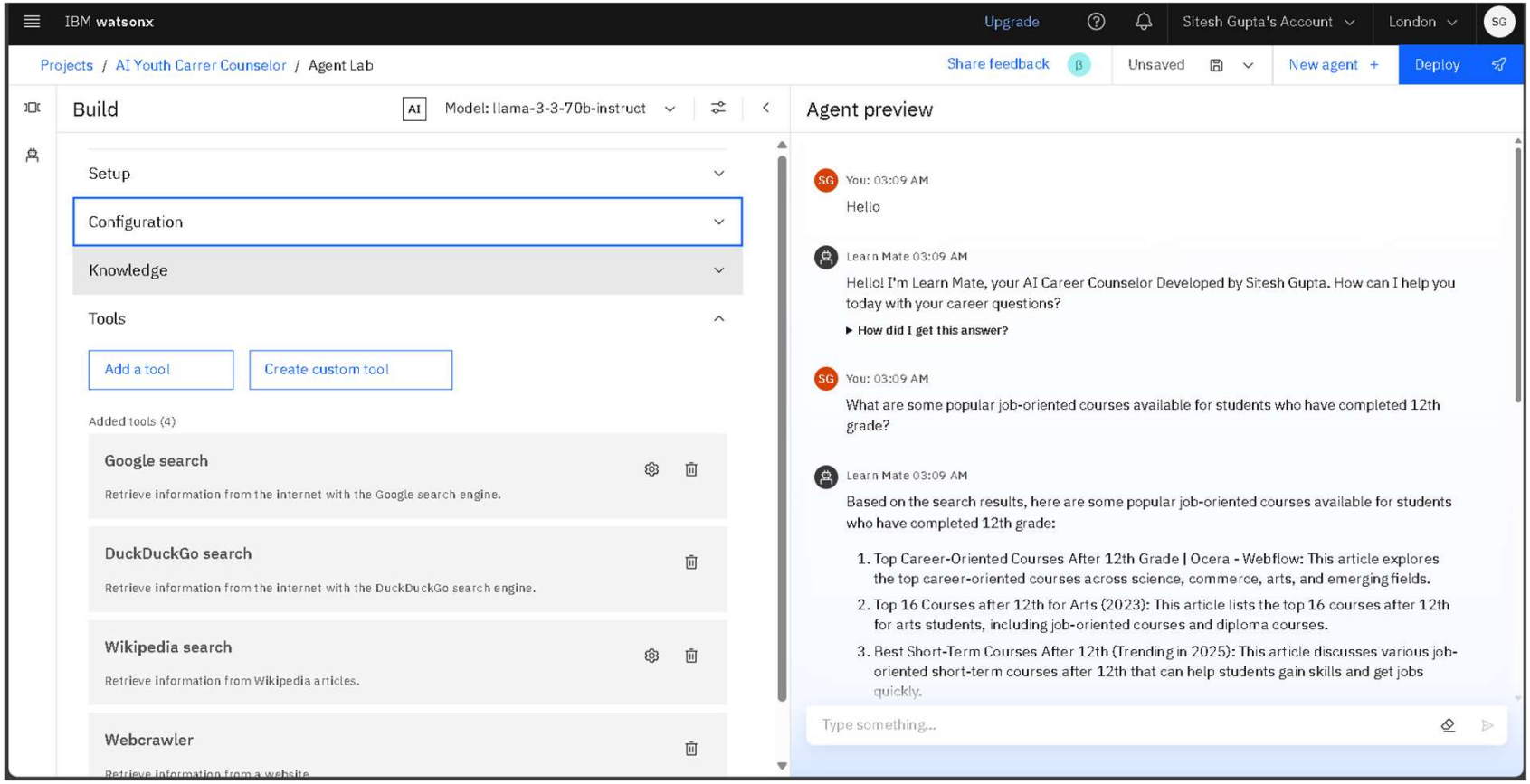
RESULT



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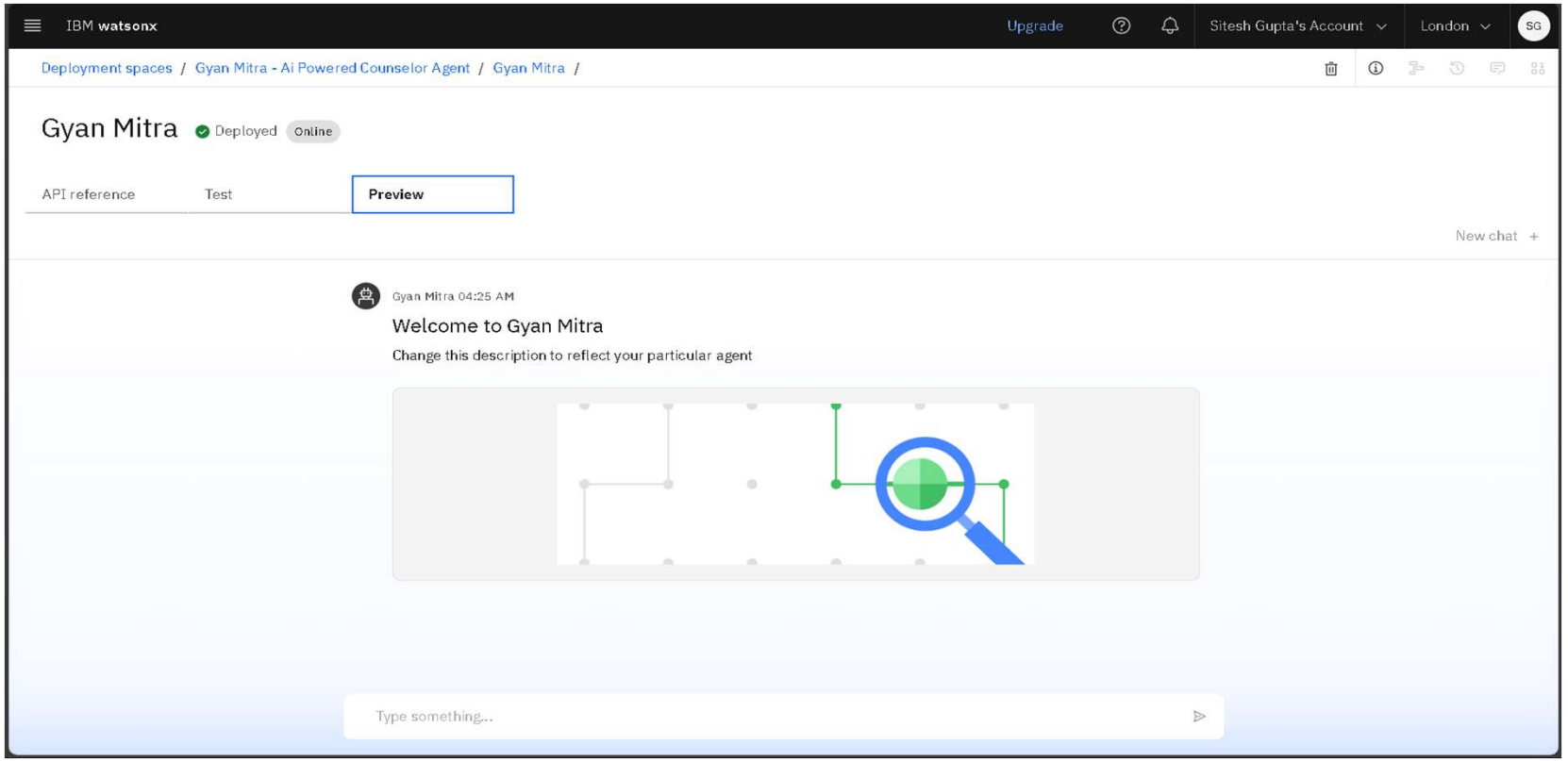
RESULT



➢**Github link:**

AI-Cloud-Internship-Edunet-IBM-SkillBuild/Carrer Counselor Project at main · Siteshgupta123/AI-Cloud-Internship-Edunet-IBM-SkillBuild

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RESULT

- **Gyan Mitra in Action:** This slide is a visual demonstration of our project. It's where we show that the AI agent is not just a concept, but a working reality.
- **Effective Query Handling:** We will show screenshots of the chatbot successfully answering a variety of questions. For example, a student might ask, "What government schemes are there for starting a small business?"
- **Accurate, Data-Grounded Responses:** The AI will not provide a generic response. Instead, it will retrieve specific information from our knowledge base and present it in a clear, conversational format.
- **Positive User Experience:** The outputs demonstrate that the agent is easy to use and provides the kind of trusted, helpful information that is often unavailable in rural areas. This is the tangible result of our work.

CONCLUSION

- **Mission Accomplished:** We successfully developed a scalable, AI-powered solution that addresses the career guidance gap for rural youth.
- **Effectiveness:** The RAG-based approach, powered by IBM watsonx.ai and the Granite model, proved highly effective at providing accurate, data-grounded, and conversational responses to user queries.
- **Challenges & Learnings:** Our biggest challenge was curating and preparing the knowledge base documents for effective retrieval. This taught us the critical importance of clean, well-structured data in building a robust RAG system.
- **Positive Impact:** Gyan Mitra is not just a technical project; it's a proof of concept for how AI can be a powerful force for social good, making vital information accessible to communities that need it most.

FUTURE SCOPE(OPTIONAL)

- **This project is a strong foundation, but there's immense potential to expand its impact. Here are some key enhancements and expansions we envision for Gyan Mitra:**
  - **Multilingual Support:** To truly serve our target audience, we would add support for multiple regional languages (e.g., Hindi, Marathi, Tamil). This would break down language barriers and make career guidance universally accessible.
  - **Hyper-Personalization:** The current agent gives general advice. A future version could remember a user's interests, location, and educational background to provide even more specific, hyper-localized guidance.
  - **Integration with Job Portals:** We could integrate with local job listing websites to provide real-time information on available job openings, helping students move from guidance to application more seamlessly.
  - **Interactive Skill Assessment:** Adding a simple, interactive quiz or a resume-building tool could make the agent more engaging and provide users with concrete, actionable steps to take in their career journey.

REFERENCES

- **IBM watsonx.ai Documentation**
  This was our primary source for understanding the RAG framework, vector index creation, and the capabilities of the Granite foundation models.
  - **URL:** https://www.ibm.com/docs/en/watsonx/saas
- **IBM Cloud Documentation**
  We referenced this for setting up and managing our cloud services, including Cloud Object Storage.
  - **URL:** https://cloud.ibm.com/docs
- **The Problem Statement Document**
  The SB4Academia_Problem Statements_2025.pdf was the foundational document that guided our project's purpose and scope.

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IBM CERTIFICATIONS

IBM **SkillsBuild** Completion Certificate

This certificate is presented to

Sitesh Gupta

for the completion of

Lab: Retrieval Augmented Generation with LangChain

(ALM-COURSE_3824998)

According to the Adob Learning Manager system of record

Completion date: 25 Jul 2025 (GMT) **Learning hours:** 20 mins

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THANK YOU

THROUGHOUT THIS 4-WEEK INTERNSHIP, I'D LIKE TO EXPRESS MY SINCERE GRATITUDE TO A FEW KEY PEOPLE AND ORGANIZATIONS. FIRST, TO MY TRAINER, **ASWINI KUMAR SIR**, THANK YOU FOR YOUR INVALUABLE GUIDANCE AND MENTORSHIP. YOUR SUPPORT WAS INSTRUMENTAL TO THIS PROJECT'S SUCCESS. I AM ALSO THANKFUL TO THE **EDUNET FOUNDATION** AND **IBM SKILLSBUILD** FOR PROVIDING THIS INCREDIBLE PLATFORM AND THE RESOURCES THAT MADE THIS PROJECT POSSIBLE. THIS EXPERIENCE HAS BEEN A POWERFUL LEARNING JOURNEY, AND I AM GRATEFUL FOR THE OPPORTUNITY. THANK YOU ALL FOR YOUR TIME.

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